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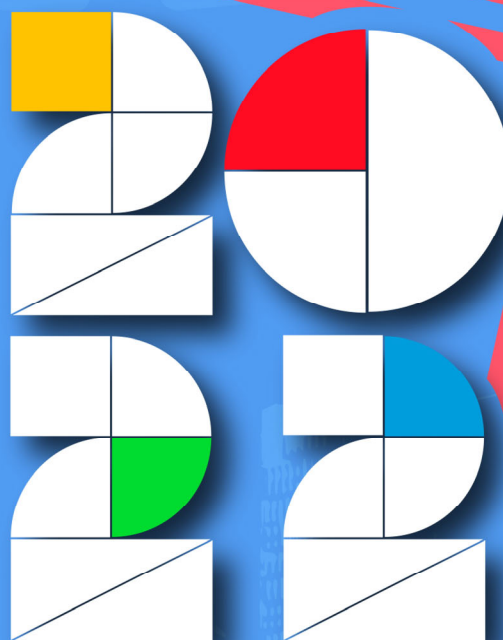
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Reengineering
Knowledge &
Creativity for
Global Excellence

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June



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TECHNOLOGY, SCIENCE, SOCIAL SCIENCES AND
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TeSSH 2022***

**Reengineering Knowledge and Creativity
for Global Excellence**

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30 June 2022
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Foreword

The papers compiled in these e-proceedings are papers presented online at Technology, Science, Social Sciences and Humanities International Conference 2022 (TeSSH I 2022) held on 30 June 2022 at Universiti Teknologi MARA (UiTM) Cawangan Kedah, Kedah, Malaysia. With the theme, ***Reengineering Knowledge and Creativity for Global Excellence***, the conference has brought together presenters of diverse background who shared their conceptual and empirical papers in broad areas that are subsumed under the fields of Technology, Science, Social Sciences and Humanities. These e-proceedings comprise current researches that were undertaken with the rigorous endeavour of knowledge enhancement to ensure that the world of academia will continue to flourish. It is thus hoped that readers will significantly benefit from knowledge contained in these proceedings.

TeSSH I 2022 and these e-proceedings would not have been possible without the great efforts from the presenters, and the generous support from the TeSSH I 2022 committee members and the Rector of UiTM Cawangan Kedah, Prof. Dr. Mohamad Abdullah Hemdi. A heartfelt gratitude is extended to all involved. It is hoped that these e-proceedings will be an impetus to stimulate further studies and research that benefit the society at large.

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The Usage of Open Green Space (Planting Strip Area) Outside the Perimeter of Terrace House Unit by the Residents: Case Study in Taman Sinar Intan, Sungai Petani

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ABSTRACT

This study is mainly to determine the usage of green space at the frontage of each terrace house unit. The objectives of this study are categorized into two which are to observe the condition and usage of green area at the frontage of each terrace type unit including the shoulder of the road that facing the house and to analyze the residents' understanding of land ownership of the green space in front of the house compound that is usually used by the residents. The housing area that has been selected in this study is located at Taman Sinar Intan in Sungai Petani, Kedah. The methods used in this study are based on literature reviews, site observation and mapping and the findings may not suitable for different types of residences other than terraced type residences as the size of the open space allocated might varies. Based on the findings, majority of terraced house owners make full use of the open green area in front of the house including the open road shoulder area for plants and are well-maintained. However, lack of control of the usage of the open green area may cause conflicts among the residents and authority yet this environmental identity still continuously practices by majority of residents, thus understanding on the concept of open green space in residential area must clearly be emphasized by all parties.

Keywords: open green area, terrace house, usage

INTRODUCTION

A residential area would not feel complete without green space in the environment. Therefore, most countries have set the need for the allocation of open space in residential development projects as a guide for developers, and the space becomes a green space that will be used as an area for planting plants or landscape in accordance with various purposes.

The findings from Ibrahim et al. (2013) declared that green space is basically considered as an open space in Malaysia. This declaration can be reinforced by similar allegation by Asmawi et al. (2015) affirmed the definition of open spaces under Section 2 (1) Town and Country Planning Act 1976 (Act 172) is “any land that is enclosed or not enclosed, for use or reserved for the use in whole or in parts as public gardens, public parks, public sports and recreational fields, tourism areas, pathways or public places” (p.15). Despite that, the credibility of land use regulation as a tool to promote sustainable housing is questionable.

There are many arising issue relating to middle income housing development involving comfort quality (Ismail & Muslim, 2017) and one of it is the implementation of green space at the house outdoor. Terraced houses are the typical residential area that facing comfort problem and need specific consideration (Mohd Yunos & Md Saring, 2012). As an effort to increase convenience in residency, the residents tend to create their personal green space at the outdoor until covering the shoulder area of the road. Notwithstanding that the open space has been utilized and not being monitored regularly and periodically by authority, there are several things that has been taken into account in this study such as territoriality which is found to be an important environmental mechanism in terrace housing mainly to limit unwanted interaction and intrusion by unknown outsiders particularly salesmen and unknown strangers (Rahim & Hashim, 2008).

LITERATURE REVIEW

Open Green Area at The Frontage of Terrace House

The beginning assertion for green space usage at the house frontage is by (Nor Atiah , 2010) in the findings of the study from Mohd Yunos and Md Saring, (2012) who found that most occupants both in low cost urban terrace houses were utilized their existing outdoor green spaces in the front areas and turn the semi-public spaces available in the forefront of their house areas as their primary garden. It has been further reassured by Rao (2018) that due to the limited area as per by laws, it leads to fragmentation of green spaces which impacts on location of these spaces within the boundary. In control of the statement above, the fragmentation is slowly will be reflecting local occupants' perceptions of their outdoor environment within their housing area and the environmental behavior of people can be influenced by the environmental knowledge (Mohd Yunos & Md Saring, 2012) which will be discussed below.

The predication from U.S. Environmental Protection Agency (United States Environmental Protection Agency, n.d.) implied the frontage distance is a width of housing lot (in feet) that fronts along the street. Ensuing in the context of space provision, many homes are being extended, and this is very commonly done in the terrace housing area which involved turning the front yard into paved and roofed surfaces which serve as car porch among other, leading to smaller amount of landscape or green space. Thus, it can be said that for the front yard, once extended, the chances to have green space integrated with the extension is small (Bakar et al., 2016). In opposite, the frontage considered to be a shared property as green areas provide sharing on the ownership of land which most of the time suggests the transfer of property from non-public to public use (Asmawi et al., 2015).

For houses that are fully extended and without green space, the residents tend to make use by having potted plants as an alternative to having greens (Bakar et al., 2016). Another viewpoint to support Bakar et al., 's (2016) previous statement is the explanation by Said (2001) resolved that many residents resort to potted planting due to tiny space could not accommodate even a medium size tree (crown diameter about 5.0m) because tree's canopy will block much of the sunlight into the house, and sometimes encroach to the reserve space on the road shoulder. The reserve space, about 1.5m in width and average size of 4.5 sqm, is the planting zone for street planting. Aside from potted plants, the Chinese would also place red altar in the garden for worshipping (Said, 2001).

Street vegetation but with the planting zone made by residents is known for the main purpose that has been elevated by Said (2001) which is provision of shade, thus only non-fruiting species are specified for street planting. When the residents remove the existing planting and replace with their own planting composition on the road shoulder. The shady place will then become the front lane is utilized for vehicle access, which is becoming a second car park for the user (Bakar et al., 2016). However, this situation may lead to other consequences of slight congestion on the roadside because of vehicles parked on the shoulder of the road.

Understanding of Land Ownership

According to U.S. Environmental Protection Agency (United States Environmental Protection Agency, n.d.), ownership by the individual lot owners automatically as a homeowners' association. The deed to each lot shall include a proportionate share of the common open space. With the exception in Malaysia context, it is mainly initiated from (Saji, 2012) stated that there are three acts that legislates the local government; Local Government Act 1976 (Act 171), Road, Drainage and Building Act 1974 (Act 133), and Town and Country Planning Act 1974 (Act 172). Land ownership focalize on Town and Country Planning Act 1974 (Act 172) that refers to the utilization of land physically. The use of land for any types of development will be determined by this act. Any physical planning will stress on the aspects of environmental pollution control, preservation of natural surroundings and deliberate on the rights and security of the residents. Each state should have balanced and consolidated policy in tackling housing development, industry, road, and social services as well as culture.

Kedah state has using 'number of housing units' approach' for housing development of 0.25 acres or more, 326.7 sq. ft. open space for each house must be provided depends on the action taken by housing developers in the state itself (Dali et al., 2014). Consequently, land ownership from the inferences drawn from dot density mapping in (Prashanti, 2018) shows that in case of row housing, the conflict of use space exists more and may be because of lack of regular space designated for active and passive activities. This enhanced the conflict of the space as it already known as a basic property commodity that becoming expensive every day (Rahim & Hashim, 2008).

Local Council Restrictions of Land Use in Terrace Housing Area

Ismail and Muslim (2017) precisely stated Malaysian housing industry is highly controlled by laws, policies and guidelines and being nurtured with said that the residents are restricted within the defined boundary of their fenced housing units. Each local council would have their own rules, which are called by-laws. It can be thought of them as smaller laws that work together for the bigger laws to work more effectively. Some local councils might allow for plants to be grown outside your compound, and some may not as it really depends on their respective by-laws. (ASKLEGAL, 2021)

Bonenberg (2015) parsed the restriction by stating the current condition of public spaces in housing area is highly unsatisfactory which then aligned with Ismail and Muslim 's (2017) statement that it is the cause of why homes undergone extension. This is due to many factors, like faulty use of existing public spaces. Thereupon Mohd Yunus and Md Saring (2012) suggested the appropriate size of green area to be improved the numbers of plant to be planted within the housing area and greater to establish new green areas near houses.

METHODOLOGY

Research Design

A total of 84 units of single storey terrace house located in Taman Sinar Intan, Sungai Petani were observed using cross-sectional Study. The area selected was identified based on the type of house which is terrace house in urban area due to limited open green area space. The observation

was design based on the usage of green area outside their house such as car parking, shading, vegetation, and other build in open space at the house frontage. The data collected were illustrated by using basic mapping of the original site plan of the residential. The objectives to be achieved is in line with the medium used by Saji (2012) which observes how the existing conditions of residential areas in terms of physically, socially and psychologically influence residents' behavior in making changes to the house. In the context of this study, observations are only focusing on the usage of green area outside the perimeter of the house. This can be supported by a statement from Bonenberg (2015) who claims the quality of public space largely shapes the spatial behavior of the residents and it fits the objectives of this study. Literary reviews such as journals, articles from websites and books readings as secondary data are also used to identify important and relevant information related to this topic and case study will be providing the data collection through site observation and basic mapping.

Study limitation

Although the study area was pre-determined, the residential area consists of various type of house such as bungalow, semi-D and row houses as this study only focus on the 84 units of terrace house. The findings for this case study may not be suitable for other types of houses and residential areas due to the size of green area provided. In addition, the other limitation of this study is only valid for the latest year and any future changes may lead to different findings. For future study, factor analysis should be conducted to the interrelationship of usage of open green area with the understanding of land ownership.

FINDINGS AND DISCUSSION

The collection of data is essentially to focus on the first objective of the condition and purpose of green space usage in the front of the house including the shoulder of the road opposite the front of the house while the second objective is more detailed through the reading of the literature reviews, but this study will analyze the use of open space for the entire area covered. 84 housing units were involved in this data analysis which consist of majority in Malays and Chinese and only terraced type houses were observed for data collection. The data will be shown in pictures and basic mapping.

Findings

The terraced housing area selected is located together with semi-d houses but the observation for this study did not involve any open space provided for the entire house in the residency. Figure 1 below show the brief observation of the surroundings around the terrace house area.



Figure 1: Street view for a row of terraced units facing the main road near the entrance

Source: Author, 2022

(a) Green Space Availability at the House Frontage

Site observations were carried out for data collection and brief mapping aimed at surveying the open spaces used in front of the house but not set out together for the use of space around the shoulder of the road. Both colors of red and green are the fulfillment of open space; red (18 curbs) indicates that the space was not used for any purpose (remains as provided originally by developer) or left without any vegetation while the green (30 curbs) indicates the space is consumed by the homeowner for various intentions as displayed by Figure 1.1.

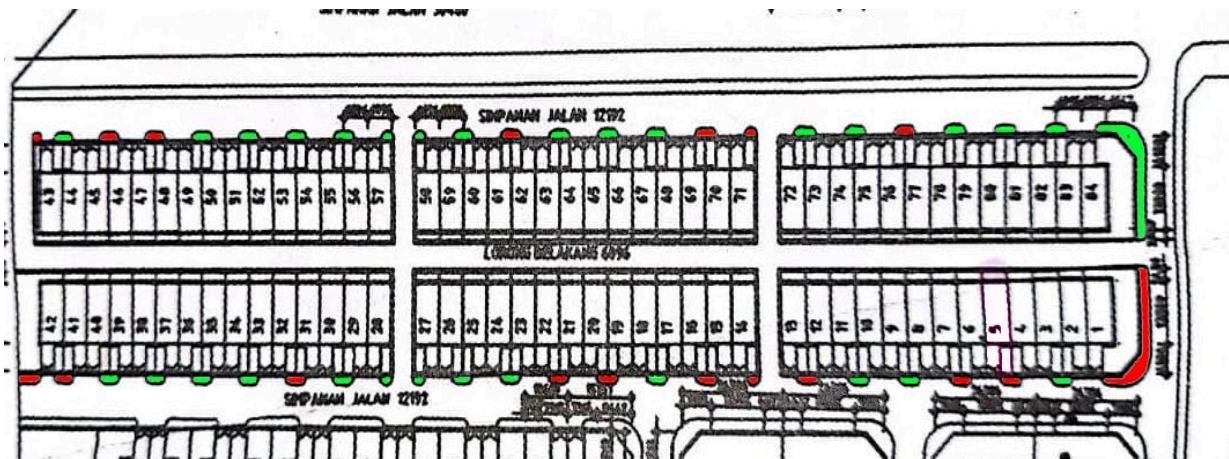


Figure 1.1: Green area availability indicator for every unit of terraced type residential

Source: Author, 2022

Site observations were carried out for data collection and terrace house layout used for mapping aimed at surveying the usage of open green area. Both colors of red and green are the fulfillment of open space; red (18 curbs) indicates that the space was not used for any purpose (remains as provided originally by developer) or left without any vegetation while the green (30 curbs) indicates the space is consumed by the homeowner for various intentions as displayed by Figure 1.1.

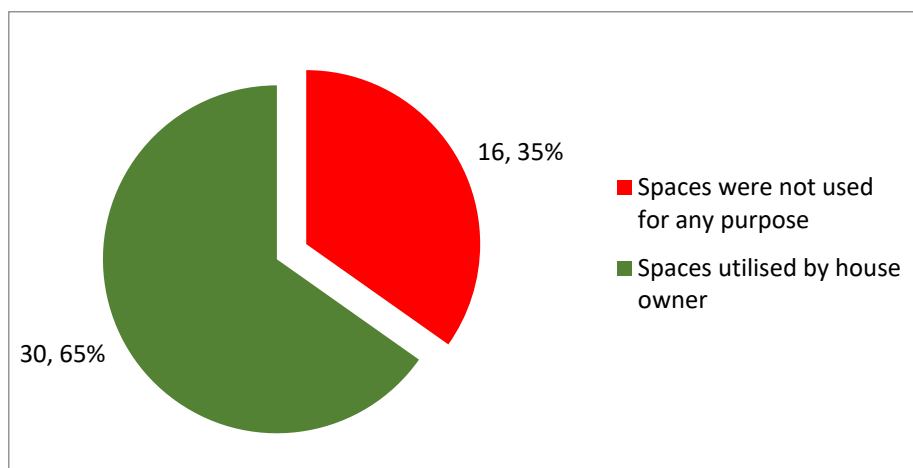


Figure 1.2: Green area usage

Source: Author, 2022

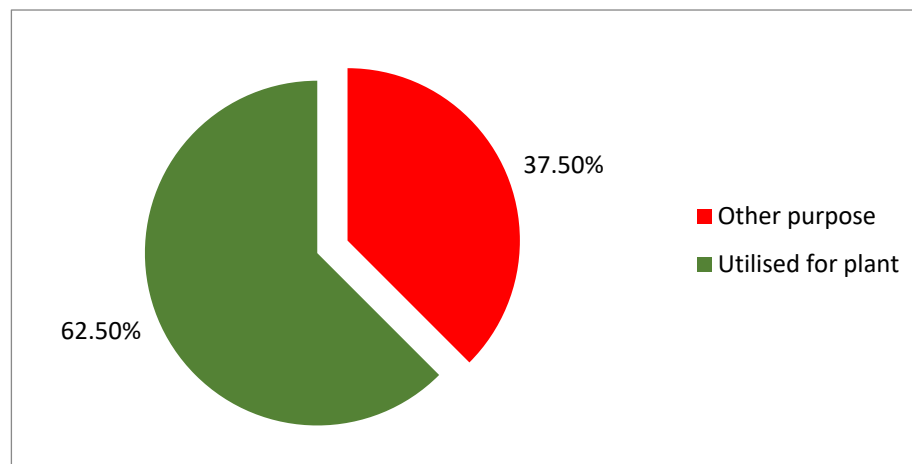


Figure: 1.3 Type of usage
Source: Author, 2022

Figure 1.3 shows how open spaces provided by the authorities for landscaping purposes have been fully utilized to plant various types of plants by 62.5% of the residents' population of terraced housing estates whilst 37.5% of the residents' population use the open space for purposes other than the application of the landscape. The use of open space including green space will be discussed in depth in the next subsection.

(b) Type of Green Space Implemented by Residents at the House Frontage

This subtopic is the key point for the first objectives in the study which represented the condition and purpose of green space's implementation at the frontage of each terrace type unit including the shoulder of the road that facing the house. The discussion below has been separated into 4 sections major use of open space.

i. Car parking

Cars or other types of vehicles being parked on the shoulder of the street mostly due to the insufficient space for parking in the veranda area of the house itself as most of the households today own more than one car. The road parked conditions are likely to disrupt traffic and visuals of the road space especially during the festive season or wedding ceremony.

In addition, among the reasons for parking related to green spaces whether the original landscape or planted by the residents themselves is that the trees on the shoulders of the road can be a shade for vehicles from hot weather.



Figure 2: Car parking at the road sideways



Figure 2.1: Car parking at the road sideways for shading purpose

ii. Shading

There are several units of houses that plant a medium-large tree right in front of the house aiming for shading from the scorching hot sunlight from directly penetrating the house. Direct shading will even cause less lighting on the unit but is seen as effective for indoor privacy conditions from the views of outsiders that traffic passing in front of the house.



Figure 2.2: Large medium trees located right in front of the house

iii. Vegetations

Most of the openly applied green spaces in front of the house consist of potted plants that arranged according to the creativity and taste of the owners of each unit. Other than that, the figures and table below also shown how residents use the empty street shoulder space facing the house as an extra space for vegetation if the front curb space of the house is not enough, some are seen gated as one of the indicators of private territory as discussed in the literature study and lastly some of green space has been extended until the aisle of the housing area.

Table 1: The size and types of plants observed within the chosen area

Size of Plants	Type of Plants
Medium	<i>Pokok pisang</i> <i>Pokok serai</i> <i>Pokok buluh madu</i> <i>Pokok bunga jejarum</i> <i>Pokok juniper</i> <i>Pokok thuja pine</i> <i>Pokok pinang merah</i>
Large	<i>Pokok kelapa</i> <i>Pokok mangga</i> <i>Pokok palma</i>
Portable	<i>Pokok lidah buaya</i> <i>Pokok labah-labah</i> <i>Pokok bunga kertas</i> <i>Pokok bunga orkid</i> <i>Pokok pinang kuning</i> <i>Pokok bunga kempoja cina</i>

Table 1 above shows the size and type of plants that have been observed in the residential area of the terrace type and there are three sections of the size of the trees which are mostly planted in the front of the house which are medium size trees, large trees, and trees that can be changed to other places. For medium-sized trees, the height of the trees observed are only the same level as the adult's feet and some are the same level or more with the average height of the adult male while the large trees are mostly high to above the roof level of the house and to some extent affect the view and light exposure in front of the house. For trees that can be changed all over the place, most of the types of trees are according to the aesthetic value and taste of the owner.



Figure 2.3: Potted plants with dustbin at the house frontage



Figure 2.4: Potted plants arrangement at the front of the house



Figure 2.5: Neat potted plants arrangement at the front of the house



Figure 2.6: Private green space with chain link fence at the shoulder of the road

iv. Other build in open space at the house frontage

The open space in front of the house is also equipped with other buildings besides plants that might differ to the original intention of observation but informative for future reference. For the Chinese, they use the open space in front of the house as a place of worship and also covered with trees to maintain the privacy of the area. In turn, gazebo was also built at the shoulder of the street facing the house to be a place of social interaction among the residents of the neighbourhood itself. In addition, the open space that remains the same is used as a collection point for unused items or rubbish to be collected by council workers who come to collect garbage regularly every week. Finally, the street shoulder space is also used as a place for drying clothes and is also covered by medium-large trees to maintain the privacy.



Figure 2.7: Chinese red altar for worshipping right in front of the house



Figure 2.8: Wooden mini house built for Chinese red altar at the shoulder of the road but remains at house frontage



Figure 2.9: Gazebo and garden at the shoulder of the road

(c) The Difference Between Residents' Green Space and Provided Green Space

The site observations convey how the green space held by residents appears to have more positive impact on the residential environment with various benefits as described in the subtopics previously. The green space provided by the authorities is not enough to create sustainability in a dwelling settlement and it is likely that this is the reason why the residents took the initiative by using empty or open spaces and placing or planting trees that fit their function. Figure 3 also explain how the green spaces provided by the authorities are not monitored regularly but it cannot be ascertained as the study did not seek personal views from the residents of the area itself for more accurate facts.



Figure 3: Less tress at the shoulder of the road

(d) Land Ownership Usage Understanding Within Residents

The understanding of the use of open space in front of the house can be analyzed roughly based on observations and majority of the residents use the front space entirely for green space besides other buildings. The nearly 20-year-old housing estate is mostly occupied by retirees and people who are still working and can be considered to be aware of the control of the use of open spaces but taken lightly as there is no frequent monitoring carried out by the relevant authorities. Some of the front curb empty space has been changed completely without any assertion of greeneries and being used for personal reason such as seating area.



Figure 4: The front area of the house which has been flattened and left vacant by several units of terraced type residential



Figure 4.1: Only a few front areas of the housing units remain as provided by the developer

Summary

As a summary of the findings, the use of open spaces or green spaces in front of houses including on the shoulder area of the street facing houses has become a familiar norm or behavior in communities that choose to live in urban areas. 62.5% of green space usage mainly come from the shading and vegetations while 37.5% of green space usage has been dedicated to car parking and temporary build for personal matter. The green space is not enough to provide comfort to the surrounding residents so that it is used until covering the shoulder area of the road. Self-developed

green spaces by residents help to increase positivity and tranquility in residential areas after being located close to the bustling city.

CONCLUSION

The conclusion of this study begins with expectations from the findings which are expected to achieve the main goal and objectives. Majority of terraced house owners make full use of the open space in front of the house including the open road shoulder area as a green space for plants and are well-maintained even when left open outdoors.

With respect to the use of land for open spaces and green spaces, it plays an important role in analysing the population's own perception of open spaces. In addition, among the reasons for the lack of control for the use of predictable land is that the open space used does not cause harm to the surrounding residents even though it was not originally allowed but no action was taken by the authorities as long as it did not receive complaints from the local residents. Even though there is no bad consequences to the usage of that particular frontage open area specifically for green space for residents, this study to some extent conveys the information that is not aware among the community that the land in front of the housing units is outside the internal boundary of the house that the land belongs to the full authority. Among the examples of the use of open space in front of the house that shows that it belongs to the original authority is the placement of signage or the construction of road humps. Therefore, every resident of the terraced house unit should take note of this information so that there will be no misunderstood in the future.

Finally, this study is expected to provide useful input to certain groups who are responsible and involved in maintaining the peace of the population. Those responsible for landscaping in residential areas should emphasize the number or type of plants that are suitable and effective for a certain period in order to reduce heat in the concrete area. Information on the use of green space outside the home area is mostly taken lightly by all parties as stated by Saji (2012) said that it is a common view in Malaysian situation, the problem arise were not being considered very seriously.

The suggestion that can be used to continue this study is that it is possible to do for other types of residence such as semi-d type houses, residential areas located in different villages or any urban areas or residential areas with different races such as this study where the majority are Malays and the minority are Chinese to study the behavior and get the views of the residents themselves so that certainty can be achieved on the awareness of the use of green spaces around the residence and the importance of knowing the land titles that can be legally used by residents in the housing areas. Finally, green space should be a close companion in human life to provide the best quality of life especially in residential development areas.

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